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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of

Docket No: Q57317

Hisashi YAMADA et al.

Appln. No.: 09/462,631

Group Art Unit: 1762

Confirmation No.: 5337

Examiner: Marianne L. PADGETT

Filed: January 11, 2000

For: GREEN-COMPACT ELECTRODE FOR DISCHARGE SURFACE TREATMENT,
MANUFACTURING METHOD THEREFOR, METHOD AND APPARATUS FOR
PERFORMING DISCHARGE SURFACE TREATMENT AND METHOD OF RECYCLING
GREEN-COMPACT ELECTRODE FOR DISCHARGE SURFACE

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APPELLANTS' BRIEF ON APPEAL UNDER 37 C.F.R. § 1.192

APPELLANT'S BRIEF ON APPEAL

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Date: September 19, 2002

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UNDER 37 C.F.R. § 1.192
U.S. Appln. No. 09/462,631**

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REAL PARTY OF INTEREST

The real party in interest is Mitsubishi Denki K. K., by virtue of an assignment.

RELATED APPEALS AND INTERFERENCES

Appellant, Appellant's legal representative, and the Assignee in this application are not aware of any other appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

STATUS OF CLAIMS

Claims 1-7 were originally pending in the present application. Claims 1-7 were amended and new claim 8 was added in an Amendment under 37 C.F.R. § 1.111 filed on October 22, 2001. Claims 1-8 on appeal are set forth in their entirety in the Appendix attached herewith.

STATUS OF AMENDMENT

A Request for Reconsideration was filed on July 19, 2002. In the Advisory Actions dated July 8, 2002, the Examiner indicated that Applicants' arguments have been considered but do not place the application in condition for allowance.

SUMMARY OF THE INVENTION

The present invention relates to a green-compact electrode for electrical discharge surface treatment of a work including a mixed material of a metal powder and a working fluid. *See* page 4, lines 4-8. The working fluid has a carbon component. *See* page 8, line 11. In addition, the present invention relates to a method of performing electrical discharge surface treatment. *See* page 5, line 3. The method includes positioning a green-compact electrode, which is made of a mixed material of a

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metal powder and a working fluid having a carbon component, opposite a work in a second working fluid, which is the same as the working fluid within the green-compact electrode; and forming a hard coating film on the work by causing electrical discharge between the green compact electrode and the work. *See* page 5, lines 3-7.

The present invention also relates to an apparatus for performing electrical discharge surface treatment. *See* page 5, lines 8-9. The apparatus includes a green-compact electrode comprised of metal powder and a working fluid having a carbon component; a work; a working tank for receiving the work; and means for causing an electrical discharge between said green compact electrode and the work. *See* page 7, lines 4-16.

Further, the present invention relates to a method of recycling a green-compact electrode for electrical discharge surface treatment. *See* page 13, lines 20-21. The method includes the following steps: a) compression molding a mixed material of a metal powder and a working fluid having a carbon component to form the green-compact electrode; b) positioning the green-compact electrode opposite a work; c) performing discharge surface treatment by causing electrical discharge between the green-compact electrode and the work to form a hard coating on the work; d) pulverizing portions of the green-compact electrode which are left after said discharge surface treating has been completed into powder, and e) compression molding the powder obtained from the pulverizing step to obtain a new green-compact electrode. *See* page 13, line 20-page 14, line 8. The present invention further relates to a method of recycling electrodes used in electrical discharge surface treatment, including the

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following steps: collecting used electrodes which are primarily composed of compressed powders; pulverizing said used electrodes into a powder; and compression molding said powder to form new electrodes. *See* page 9, line 18 to page 11, line 4.

ISSUES

1. Whether claims 1 and 3 are properly rejected under 35 U.S.C. § 102(b) as being anticipated by Vignaud (U.S. Patent 4,440,835).
2. Whether claims 2 and 4 are properly rejected under 35 U.S.C. § 103(a) as being unpatentable over Vignaud (U.S. Patent 4,440,835).
3. Whether claims 5-8 are properly rejected under 35 U.S.C. § 103(a) as being unpatentable over Vignaud (U.S. Patent 4,440,835) and further in view of Magara et al. (U.S. Patent 5,698,114).

GROUPING OF CLAIMS

The claims do not stand or fall together.

For purposes of appeal, claims 1-4 are grouped together.

For purposes of appeal, claims 5-8 are grouped together.

ARGUMENT

A. The Examiner's Position

For the Board's convenience, the Examiner's position, as set forth on pages 2-4 of the Office Action dated February 20, 2002, is reproduced below.

1. Claims 1 and 3 are rejected under 35 U.S.C. § 102(b) as being clearly anticipated by Vignaud.

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Vignaud teaches making electrodes by compression molding of a dry mixture containing particles of a conducting compound such as graphite, a catalytically active compound (e.g., C catalyzed Ag), PTFE fibers, all mixed with a lubricant such as kerosene or an oil (which has a carbon component). Vignaud teaches applicability to electrodes generally, and those for electrochemical generators particularly. See the abstract; col. 3, lines 1-52, esp 49-50 and 21-23; and col. 4, lines 43-68. Note that the claimed structure of the electrode is still covered, as the particle mixture may contain silver, a metal as a catalyst, and that for product claims it is NOT necessary for the intended end use to be taught, just the claimed structure. The "comprising" formate of the claims means that it is irrelevant that the component included for conductivity is carbon, because Ag particles may be present which suffices to read on metal powder as claimed.

2. Claims 2 and 4 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Vignaud.

Vignaud does not provide a teaching on the possible useful ranges of amounts of lubricant useful for his pastes, although the example 1 works out to be about 24 to 25 % by weight of lubricant, however the working procedure (col. 5, lines 4-6) would have been expected to not remove any lubricant on the surface. It would have been obvious for one of ordinary skill in the art, to adjust the percentages of lubricant employed, according to its viscosity and the amounts of different dry materials employed in order to produce a paste of useful consistency.

3. Claims 5-8 are rejected under 35 U.S.C. §103(a) as being unpatentable over Vignaud as applied to claims 1-4 above, and further in view of Magara et al.

As noted, Vignaud does not particularly specify that his graphite electrode may be used as the electrode in electric discharge operations, however Magara et al. (abstract; figures; col. 2, lines 16-28) show that graphite electrodes are known for use in producing wear resistant (hard) coatings and that they are known to be consumed and used in a tank of working fluid. It would have been obvious to one of ordinary skill in the art to use graphite electrode for a process it is known to perform, ie., electric discharge treatments, where Vignaud is seen to produce such graphite electrode. As is also noted in Magara et al, kerosene (a lubricant used by Vignaud) is an ordinary mineral oil used in such discharge process (col. 6, lines 10-11 and 48-49). It would have been obvious to one of ordinary skill in the art, that when one used an electrode to the point where it function has degenerated from consumption, to replace it in order to maintain quality of ones out put. It would have been obvious to replace the electrode with the same type one has been using, ie., the steps of making it can be essentially said to have been repeated. What one does to the removed electrode will depended on its condition, economics and ones resources. It would have been obvious to crush used electrodes for either disposal processing or for recovery of reusable or valuable components, but applicants claims as written do not do anything but pulverize the remains. The claims don't use the powder produced for anything!

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B. Appellant's Response

1. Response to rejection of claims 1 and 3 as anticipated by Vignaud and claims 2 and 4 as obvious over Vignaud

Appellants respectfully submit that the embodiments of the present invention according to claims 1 and 3 are not anticipated and that claims 2 and 4 are not obvious.

Claims 1 and 2 are directed to a green-compact electrode for electrical discharge surface treatment of a work comprising: a mixed material of a metal powder and a working fluid having a carbon component. Claims 3 and 4 are directed to a method of manufacturing a green-compact electrode for electrical discharge surface treatment comprising: the step of compression-molding a mixed material of a metal powder and a working fluid having a carbon component.

Vignaud relates to a thin electrode for electrochemical devices or generators (batteries and accumulators, i.e., primary and secondary cells). *See* col. 1, lines 5-7. Therefore, the electrode of Vignaud is not an electrode that can be used for electric discharge surface treatment. Since Vignaud does not relate to an electrode that can be used for electric discharge surface treatment, Appellants respectfully submit that Vignaud is not particularly relevant to the present invention.

In addition, the Examiner takes the position that Ag particles may be present since Vignaud discloses, for example, Ag catalyzed C.

Generally, a catalyst is not consumed or does not undergo a chemical change. Vignaud discloses carbon catalyzed by Ag as a catalytic active compound. *See* col. 3,

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lines 4-6. Therefore, contrary to the Examiner's position, Ag particles would not be present since Ag is a catalytic compound. As a result, Vignaud does not disclose a metal powder, as required in the present invention.

Accordingly, Vignaud does not teach the green-compact electrode of the present invention.

In view of the foregoing, Appellants respectfully submit that claims 1 and 3 are not anticipated and that claims 2 and 4 are not obvious.

2. Response to rejection of claims 5-8 as obvious over Vignaud in view of Magara

Appellants respectfully submit that the embodiments of the present invention according to claims 5-8 are not obvious over Vignaud in view of Magara.

Vignaud does not teach or suggest the green-compact electrode of the present invention for the reasons discussed above.

In addition, one of ordinary skill in the art would not be motivated to combine Vignaud and Magara et al.

As noted above, Vignaud relates to an electrode that can be used in, for example, a battery.

In contrast, Magara et al. relates to an apparatus and process for forming surface layers on electrodes by electron discharge machining.

The Examiner appears to take the position that one of ordinary skill in the art would combine Vignaud and Magara et al. simply because both references disclose an electrode containing graphite.

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Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching, suggestion or incentive supporting the combination. *See* MPEP 2143.

In this case, there is no disclosure in Vignaud that would motivate one of ordinary skill in the art to use Vignaud's electrode as a source for forming a surface layer since Vignaud is directed to an electrode for use, for example, in a battery.

In addition, there is no disclosure in Magara et al. that would motivate one of ordinary skill in the art to use Vignaud's electrode in the process of Magara et al. since Magara et al. relates to forming surface layers on electrodes by electron discharge machining.

Therefore, neither reference provides any technical motivation for one of ordinary skill to modify either reference. Accordingly, one of ordinary skill in the art would not combine the two references to arrive at the present invention.

In summary, Appellants respectfully submit that Vignaud in view of Magara et al. fail to teach or suggest the present invention.

Therefore, Appellants submit that claims 5-8 would not have been obvious.

Conclusion

In view of the above, Appellants submit that the Examiner's rejections are improper and should be reversed.

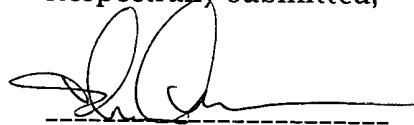
Favorable consideration is respectfully requested.

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The present Brief on Appeal is being filed in triplicate. Unless a check is submitted herewith for the fee required under 37 C.F.R. §1.192(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

Appellants hereby petitions for any extension of time which may be required to maintain the pendency of this case, and any required fee for such extension is to be charged to Deposit Account No. 19-4880.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Richard C. Turner', is written over a horizontal dashed line.

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Date: September 19, 2002

APPENDIX

1. A green-compact electrode for electrical discharge surface treatment of a work comprising: a mixed material of a metal powder and a working fluid having a carbon component.

2. A green-compact electrode for electrical discharge surface treatment according to claim 1, wherein the working fluid constitutes 5 wt % to 10 wt % of the green compact electrode.

3. A method of manufacturing a green-compact electrode for electrical discharge surface treatment comprising: the step of compression-molding a mixed material of a metal powder and a working fluid having a carbon component.

4. A method of manufacturing a green-compact electrode for electrical discharge surface treatment according to claim 3, wherein a mixture ratio of the working fluid constitutes 5 wt % to 10 wt % of the green compact electrode.

5. A method of performing electrical discharge surface treatment comprising:
positioning a green-compact electrode comprised of a mixed material of a metal powder and a working fluid having a carbon component opposite a work in a second working fluid, which is the same as the working fluid within the green-compact electrode; and

forming a hard coating film on the work by causing electrical discharge between the green compact electrode and the work.

6. An apparatus for performing electrical discharge surface treatment comprising: a green-compact electrode comprised of metal powder and a working fluid

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having a carbon component; a work; a working tank for receiving said work; and means for causing an electrical discharge between said green compact electrode and said work.

7. A method of recycling a green-compact electrode for electrical discharge surface treatment comprising:

a) compression molding a mixed material of a metal powder and a working fluid having a carbon component to form the green-compact electrode;

b) positioning the green-compact electrode opposite a work;

c) performing discharge surface treatment by causing electrical discharge between the green-compact electrode and the work to form a hard coating on the work;

d) pulverizing portions of the green-compact electrode which are left after said discharge surface treating has been completed into powder, and

e) compression molding the powder obtained from the pulverizing step to obtain a new green-compact electrode.

8. A method of recycling electrodes used in electrical discharge surface treatment, comprising:

collecting used electrodes which are primarily composed of compressed powders;

pulverizing said used electrodes into a powder; and

compression molding said powder to form new electrodes.



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GREEN-COMPACT ELECTRODE FOR DISCHARGE SURFACE

SUBMISSION OF APPELLANT'S BRIEF ON APPEAL

Commissioner for Patents
Washington, D.C. 20231

Sir:

Submitted herewith please find an original and two copies of Appellant's Brief on Appeal. A check for the statutory fee of \$320.00 is attached. Authorization is also given to charge or credit any difference or overpayment to Deposit Account No. 19-4880. A duplicate copy of this paper is attached.

Respectfully submitted,

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